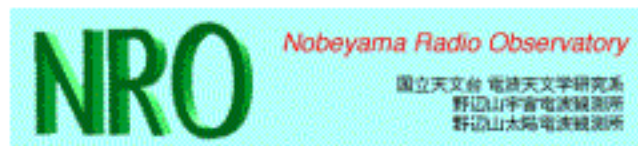


# VLB I Collaboration between Korea and Japan

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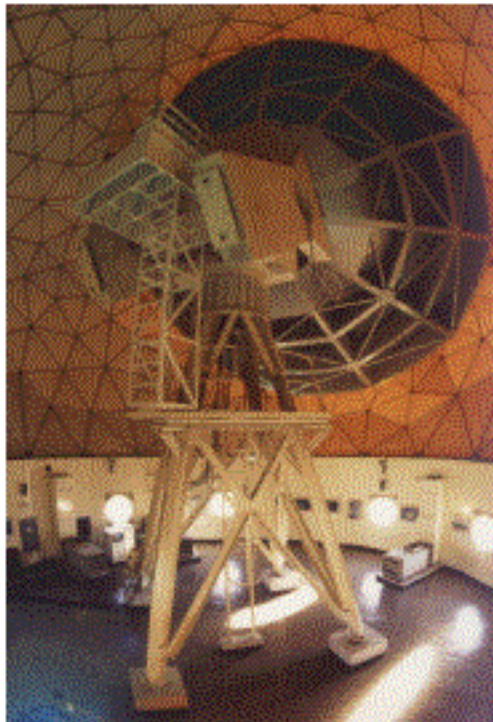
- ◆ Background of Cooperation
  
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## Background of Cooperation

- Korea Astronomy Observatory (KAO) and National Astronomical Observatory of Japan (NAOJ) have just started new VLBI projects (Korea VLBI Network: KVN, and VLBI Exploration of Radio Astrometry: VERA), almost simultaneously. The bilateral collaboration is strongly expected because VLBI networks become powerful when they are combined.
- KAO as a beginner of VLBI needs to start VLBI experiment and research through the connection between TRAO 14m and NRO 45m telescopes.

- Just in time, the second Korea-Japan Science and Technology Forum including radio astronomy field was held in 2000 Oct. and related cooperation items came to an agreement. These items are as followings:
  - Compatible and real-time system between KVN and VERA
  - Cooperative scientific projects in the fields of astronomy, earth science, precision geodesy etc.
  - Exchange of researchers and techniques
  - Joint symposium/workshop regularly in both countries by turns

# The Present Progress



- **First mm VLB I Observations between Korea and Japan**



## ◆ Characteristics of TRAO 14m-NRO 45m

- Baseline :  $\sim 1,000$  km East-West
- Fringe spacing :  $0.7$  mas @  $86$  GHz
- SEFD :  $\sim 3,000$  Jy (Equiv.  $25$ m dish pair)

## ◆ System Test and Observations

- 2001 March  $\sim$  June



## ◆ Preparation at Taeduk

- 2001 April 27-28 to May 22 at TRA0 14m
- Dual RX(100/150 GHz)
- Install the VLBI system
  - Transportation from Japan : Recorder, ...
  - Diagnostic Test for each device
  - Recording Test with SiO maser sources
  - Phase Stability Test

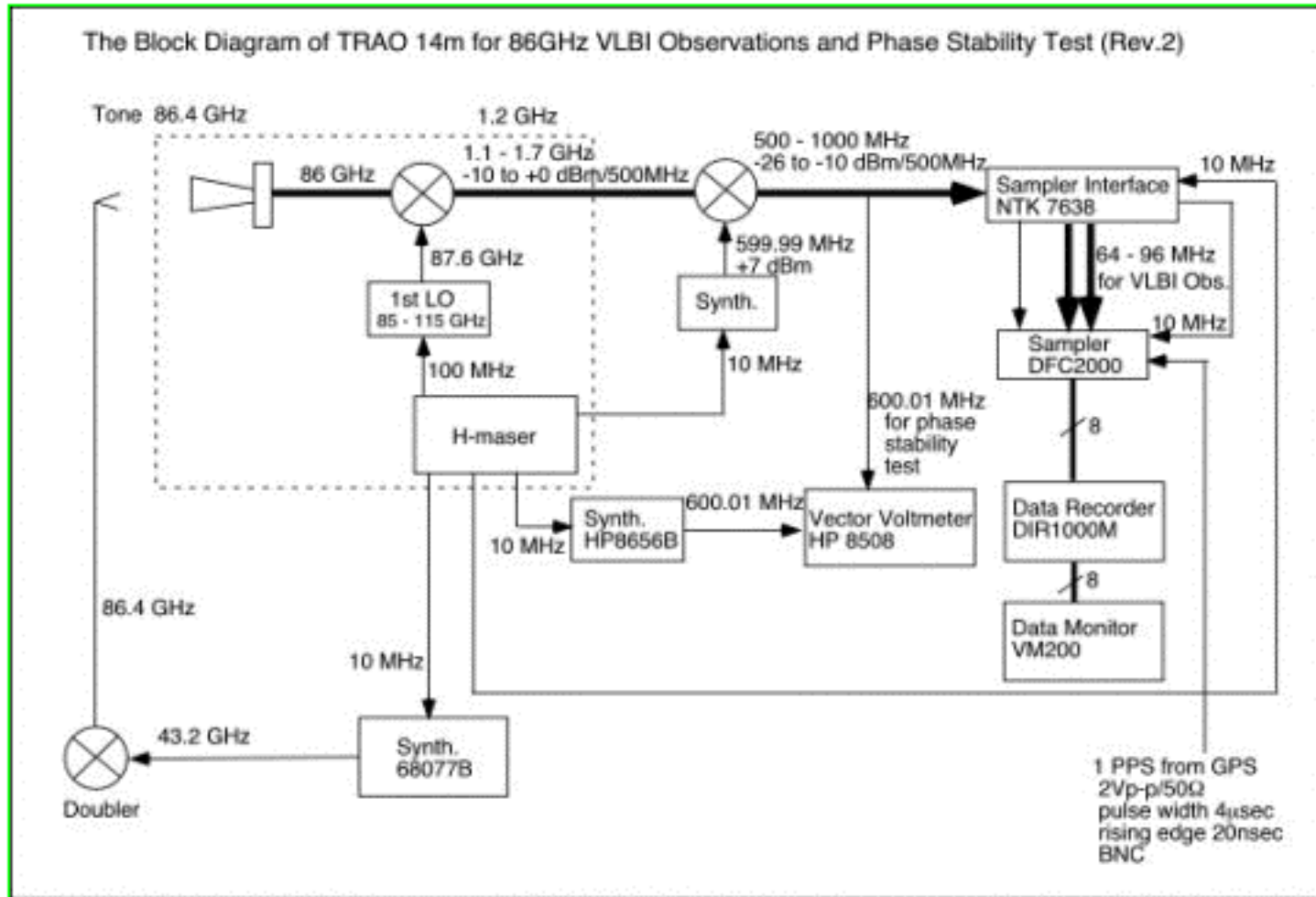


## ◆ Observations

- Freq : 86.207~86.239 GHz (SiO  $v=1$ ,  $J=2-1$ )
- Recording : 128Mbps(32MHz, 2bits) with DIR 1000M (VSOP)
- Objects : Orion KL, VY CMa,  $\theta$  Cet, 4C39.25, 0420-014, 0528+134
- Date : May 23(cloudy/rain), June 2(clear) , 2001
- Tsys : June 2 (350K at TRAO, 500K at NRO)



# VLBI System of TRAO 14m (2001 April 27-28)

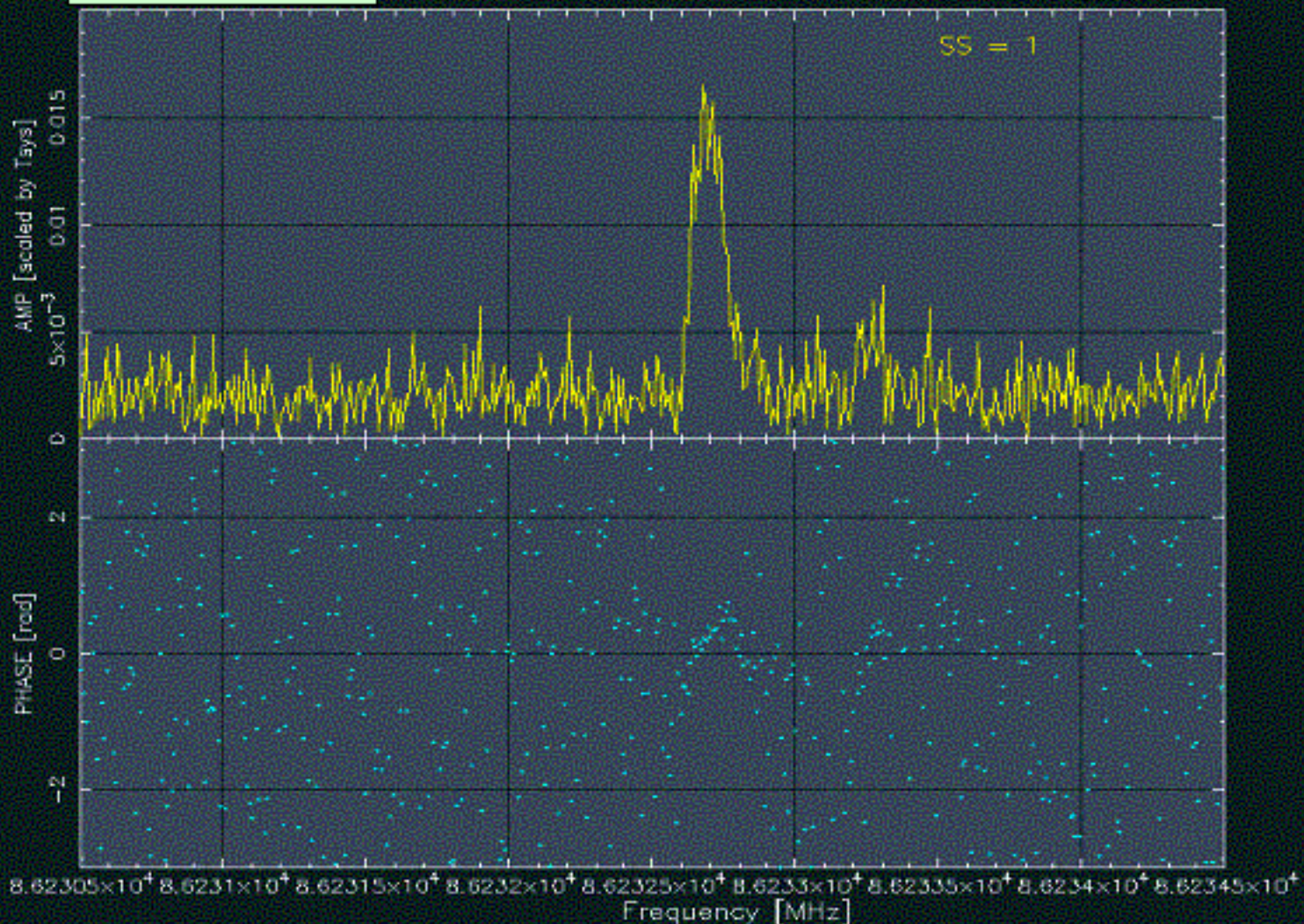


## ◆ Results

- **Successful Detection of Fringes** from Orion KL, VY CMa and 0420-014 in the first mm-VLBI observations between Korea and Japan
- First step to **Joint Operation** between KVN and VERA
- **Scientific Observations** for SiO and CH<sub>3</sub>OH maser sources will be performed in this winter

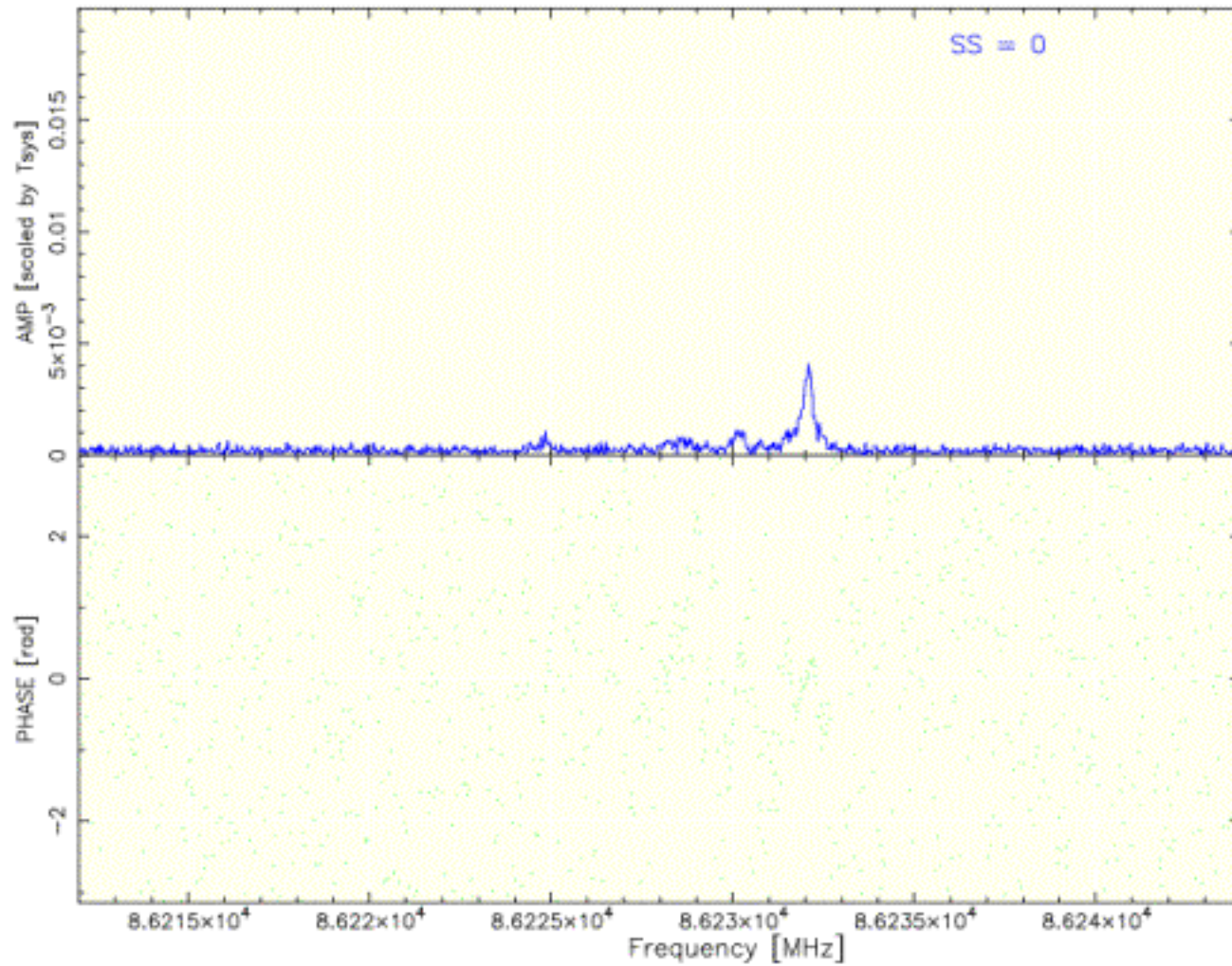
# Orion KL

EXPER : K01153  
 SOURCE : ORION  
 BASELINE : NOBEYA45 - TAEDUK  
 TIME : 2001 1538 05:02:40



VY CMa

EXPER : k01153  
 SOURCE : VYCMa  
 BASELINE : NOBEYA45 - TAEDUK  
 TIME : 2001 153d 05:19:31



## The Present Progress

- **◆ Korea-Japan VLBI Collaboration Meeting**
- First Korea-Japan VLBI Collaboration Meeting
  - Date: June 2001, Venue: KAO, Taejon, Korea
  - Agenda
    - Review of 86 GHz VLBI experiment between
    - TRA0 14m and 45m
    - Future collaboration of mm VLBI observations
    - Progress reports of KVN and VERA projects etc.

# Future Plans

- **mm VLBI observations between KAO 14m and NRO 45m**
  - Scientific observations for SiO and CH<sub>3</sub>OH maser sources from this winter season
  - System preparation for VLBI observations
- **Second Korea-Japan VLBI Collaboration Meeting**
  - Date: Dec. 14, 2001
  - Venue: Kagoshima, Japan
  - Agenda: under preparation

# Suggestions

**KAO 14m + NAOJ 45m : KAO-NAOJ Network**



**KVN + VERA : Korea-Japan Network**



**KVN + VERA + China & Taiwan Tel. :  
East Asian Network**